

**Abstract of the Disclosure**

Apparatus for detecting hazardous materials is mounted on an aircraft and has a sensor, a heading unit, a transceiver and a GPS unit. The sensor has an airfoil shaped probe and an electronics module. The probe has a positive airflow, enclosed sensing chamber with a hazardous material sensing element. The system for detecting hazardous materials includes aircraft with the hazardous material detecting apparatus and a ground network. The method for detecting hazardous materials includes the steps of providing aircraft with hazardous material sensing apparatus and a ground network, collecting hazardous material and atmospheric data with the sensing apparatus, transmitting the position, wind velocity and hazardous material data to the ground network, calculating distribution of hazardous materials in the atmosphere, generating a real-time map of distribution of hazardous materials and predicting dispersion of the hazardous materials in the atmosphere.